REMARKS

Claims 1-8 are pending and stand rejected. The amendment to Claim 1 is supported by Figure 2, which shows an air feeder that has an air supply conduit directly connected to the fuel cell and a reformer with a fuel gas conduit directly connected to the fuel cell.

PRIORITY APPLICATION

As indicated in Form PCT/IB/304, attached to the previous response, a certified copy of the priority application was received by the International Bureau on November 5, 2001 and therefore should have been forwarded to the PCT branch of the PTO. Accordingly, the Examiner may obtain a certified copy of the priority application from the PCT branch of the PTO.

Applicant requested the Examiner's help on this point in the last response but the Examiner has not yet acknowledged the receipt of the priority document.

DRAWINGS

The Examiner has not indicated on the Office Action Summary that the formal drawings filed on February 20, 2002 are accepted. Therefore, applicant respectfully requests acknowledgement of the drawings in the next communication from the Examiner.

Applicant requested this acknowledgement in the last response but the Examiner has not yet acknowledged the formal drawings.

CLAIM REJECTIONS – 35 USC § 103

Claims 1-8 are rejected under 35 USC § 103(a) as being obvious over Azuma (US Patent No. 5,631,532) in view of Kawatsu (US Patent No. 5,712,052). Applicant traverses this rejection on the grounds that a *prima facie* case of obviousness has not been established by these two references. In order to establish a *prima facie* case of obviousness, there must be: (1) motivation to combine or modify references, (2) a reasonable expectation of success and (3) a teaching or suggestion of all the elements of the claims. Applicant urges that the present record does not show a teaching or suggestion of all the elements of the claims and does not show motivation to modify references, based on a careful reading of the references.

The outstanding rejection for obviousness combines two references, the primary reference Azuma and the secondary reference Kawatsu. Azuma relates to a vehicle having a

fuel cell system. As admitted by the Examiner, "Azuma lacks the teaching of a toxic substance sensor and microprocessor programmed to control operation and stop of the fuel cell based on detection of a toxic substance."

In order to remedy the deficiencies of Azuma, the Kawatsu reference is cited. Specifically, page 3 of the Office Action dated October 14, 2004, states:

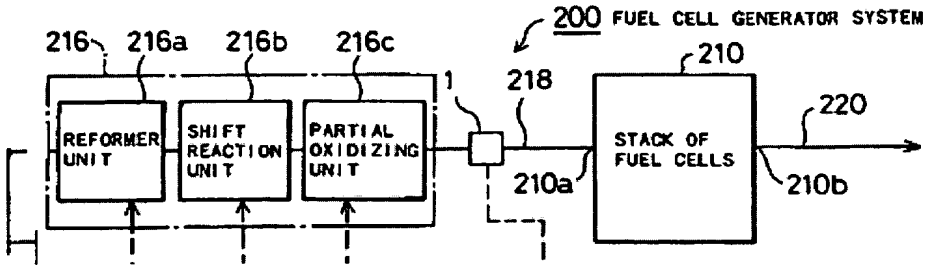
> "Kawatsu teaches a sensor (1) that detects a toxic substance (carbon monoxide as described in column 6, line 63) **contained in the air supplied by an air feeder (218)** and a microprocessor (230) programmed to control operation and stop of a fuel cell (210) based on the result of detecting the toxic substance, as described in column 6, lines 51-67, column 15, lines 41-67 and column 16, lines 1-26." (Emphasis added).

Applicant respectfully urges that actually this is not what the Kawatsu reference discloses. The conduit (218) is a gaseous fuel supply conduit that supplies hydrogen rich gas. The conduit (218) is not an air feeder. In fact the phrase "air feeder" is not present anywhere in the description of Kawatsu.

Throughout the entire specification, Kawatsu consistently refers to the conduit (218) as a gaseous fuel supply conduit. The specific description in Kawatsu of a gaseous fuel supply conduit (218) in the detailed description of Figure 1 is presented below.

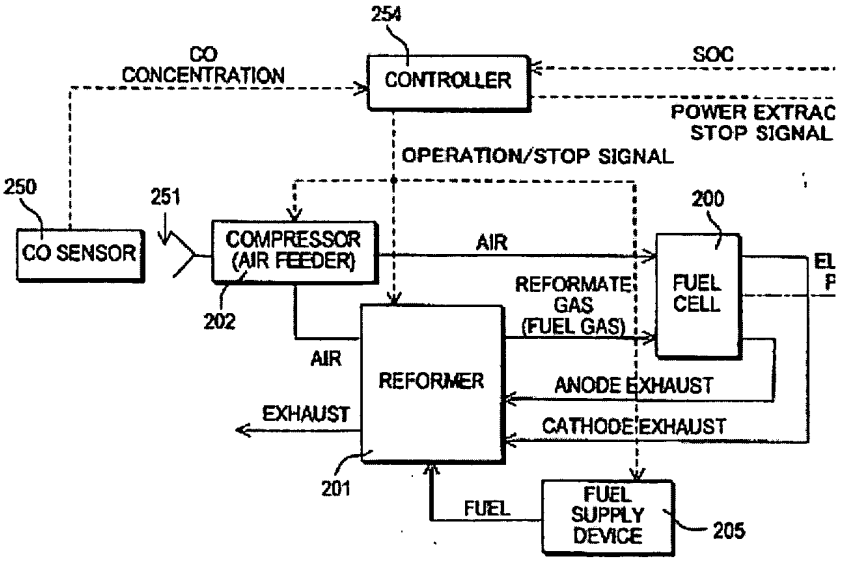
> "The fuel cell generator system 200 includes a stack of polymer electrolyte fuel cells 210 for generating electrical energy, a reformer 216 for generating hydrogen-rich gas from methanol stored in a methanol reservoir 212 and water stored in a water reservoir 214, **a gaseous fuel supply conduit 218 for feeding the hydrogen-rich gas** generated by the reformer 216 as a gaseous fuel to the stack of fuel cells 210, and a gaseous fuel discharge conduit 220 for discharging the residual gas from the stack of fuel cells 210. The fuel cell generator system 200 is further provided with a carbon monoxide sensor 1 in the middle of **the gaseous fuel supply conduit 218**." (Column 6, lines 51-64.) (Emphasis added.)

The relevant portion of Figure 1 of Kawatsu is shown below,



The reformer (216) of Kawatsu does not generate air--instead it generates hydrogen gas, as mentioned in column 6, lines 58-61. Therefore, the carbon monoxide detector of Kawatsu does not detect carbon monoxide in the air but in the hydrogen rich gas using the sensor (1). It is impossible to detect carbon monoxide in the air using the sensor (1) because the carbon monoxide detector is positioned between the reformer (216) and the stack fuel cell (210) as shown in Figure 1 and the other embodiments.

This is in contrast to the present invention, which is directed to "a sensor (250) which detects a toxic substance in **the air supplied by the air feeder (202)**." See pending claim 1 of the present application. (Emphasis added.) This is illustrated in a portion of Figure 2, taken from the present application.



Applicant therefore urges that there is no teaching or suggestion in any of the cited references to place a sensor (250) which detects a toxic substance in **the air supplied by the air feeder (202)**. Without such a teaching, the combination of the cited references do not suggest all of

the features of the present claims and therefore cannot establish a *prima facie* case of obviousness. Moreover, there is nothing taught in these references that would motivate one of ordinary skill in the art to place sensor to detect the air supplied by the air feeder.

Moreover, as applicant has previously stated, Kawatsu detects the carbon monoxide concentration in the hydrogen rich gas as mentioned above and increases air supply amount such that the carbon monoxide concentration falls when the detected carbon monoxide concentration becomes high. Further, the third embodiment of Kawatsu detects the carbon monoxide concentration at the inlet and outlet of the fuel cell, and increases or decreases the air supply amount to the reformer according to the detected carbon monoxide concentration (Fig. 8, line 41, column 15-line 26, column 16).

Although Kawatsu stops the fuel cell when the carbon monoxide concentration becomes high, this stoppage is performed when it is determined difficult to continue the operation of fuel cell or it is determined that there is no hope of recovery from catalyst poisoning due to high carbon monoxide concentration.

In contrast, the present invention stops the fuel cell based on the result of detecting the toxic substance and the battery charge state such that (1) the poisoning of fuel cell due to the toxic substances in the supply air and (2) the shortage of supply power are both prevented. This prevents the performance of the fuel cell from failing due to a toxic substance without reducing the running performance of the fuel cell vehicle.

In conclusion, applicant urges that the present invention is not obvious over the combination of Kawatsu and Azuma and the outstanding rejection should be withdrawn.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 CFR §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a

check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

Respectfully submitted,

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